Farm Loan Volume Prospects
for the New Farmer Mac

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Introduction

The Federal Agricultural Mortgage Corporation (Farmer Mac) is a government sponsored enterprise (GSE) with the authority to operate secondary mortgage markets for farm and rural home mortgages (Farmer Mac I) and certain USDA guaranteed loans (Farmer Mac II). Facing possible financial failure, Farmer Mac requested and received a charter change in early-1996. The authorizing legislation expanded the corporation's charter, patterning it closely after that of the Federal National Mortgage Association (Fannie Mae).

While granting Farmer Mac new authorities, Congress also gave the corporation a relatively short time table for proving there is sufficient need for its services. Farmer Mac must boost its capital from $14 million to $25 million by February 1998 and meet permanent capital standards by February 1999. If Farmer Mac fails to meet these deadlines, the corporation must suspend its business activity and could be forced to liquidate its assets.

Obtaining mortgage volume has been difficult for Farmer Mac I. In 7 years of operation, eight loan pools totaling $948 million were completed, with only one coming under its new statutory structure. While the new charter improves Farmer Mac's chances for success by removing structural impediments that constrained business volume, it still faces primary credit market conditions that have limited its growth thus far (USDA, 1996). These market conditions include continued preference for lower cost variable-rate mortgages among farm borrowers, sufficient liquidity within the banking system, and healthy profit margins enjoyed by lenders on loans with short term rates. The ability to grow may have been further impaired recently when the Western Farm Credit Bank abruptly stopped pooling loans. Farmer Mac is now pooling loans itself. If volume growth remains sluggish, retained earnings from business activities will not likely be sufficient to meet Farmer Mac's capital requirements, and it will have to rely on new stock issues to recapitalize.

Farmer Mac must penetrate a small and mature primary farm mortgage market that is already supported by the oldest GSE--the Farm Credit System. Growth in farm real estate debt continues to be modest--around the rate of inflation. Farmer Mac's success may not depend so much on growth in the primary market, but on its ability to persuade lenders to use securitization as an alternative to portfolio lending. Farmer Mac may need to convince traditional lenders of the

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interest rate and credit risk management and capital conservation opportunities that securitization offers. The benefits to lenders--higher asset quality, greater liquidity, and lower capital requirements of selling loans or holding mortgage backed securities instead of whole loans--influenced the growth of the housing GSE's in the 1970s and 1980s. Persuading lenders to enter into securitization programs, such as "swaps" (wherein existing loans are exchanged for Farmer Mac guaranteed mortgage-backed securities), will take time.

This paper examines the size of the primary farm mortgage market and the proportion of it that is both eligible and available for securitization through Farmer Mac I. The focus of the discussion is on primary market factors and conditions that may influence the near term growth in Farmer Mac I volume. Over time, the benefits and opportunities of a functioning secondary market may change the operation and efficiency of the primary market and influence Farmer Mac growth. The analysis of these dynamic interrelationships is beyond the scope of this paper, and is a topic for future research. We use USDA's Farm Costs and Returns Survey (FCRS) for 1994 to examine the amount of outstanding farm debt that meets Farmer Mac I's loan underwriting standards. While Farmer Mac might hold loans in portfolio, much of our analysis assumes it will continue to use mortgage-backed securities to finance its activities because of their lower capital requirements.

New Authorities: What Changed?

Farmer Mac's new charter came under Title I of the Farm Credit System Reform Act of 1996 (P.L. 104-105), which was signed into law on February 10, 1996. The new charter allows Farmer Mac to purchase loans directly from lenders (originators) and either hold them in portfolio (on balance sheet assets) or sell them off as mortgage-backed securities (off-balance sheet assets).[2] Farmer Mac now has control over the entire securitization process. The legislation also codifies Farmer Mac's interpretation of statute language which restricts the value of rural homes eligible for a Farmer Mac guarantee.

The legislation also repealed the 10-percent subordinated participation interest (SPI) or cash reserve requirement and geographic, commodity, and borrower diversity pooling standards. The SPI and diversification standards were the primary firewall between Farmer Mac's capital and loan losses and were unique for a GSE. The legislation gives the corporation full agency status in capital markets, clarifies its exemption from State usury laws, and makes other adjustments.

Farmer Mac was given an additional 3 years to meet its originally scheduled 5-year transition to permanent capital standards. After the transition period ends in February 1999, Farmer Mac's new minimum capital requirements will be 2.75 percent (up from 2.50 percent) for

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[2] The Food, Agriculture, Conservation, and Trade Act Amendments of 1991 (P.L. 102-237) gave Farmer Mac the authority to operate a linked portfolio strategy (LPS). Under the LPS, senior mortgage backed securities were purchased from a pooler and financed through the sale of Farmer Mac securities.

on-balance sheet assets and 0.75 percent (up from 0.45 percent) for off-balance sheet assets. During the phase-in period these standards increase incrementally from 0.45 percent during the first year for both classes of assets. The Farm Credit Administration (FCA), is prohibited from implementing risk-based capital standards and must publish proposed standards in public rule form during the transition period. If Farmer Mac fails to bring its core capitalization up to $25 million within two years of enactment it will no longer be able to guarantee or issue mortgage backed securities. Also, the FCA was given explicit authority to place the corporation into conservatorship, receivership, and liquidation if Farmer Mac capital becomes inadequate.

Volume Growth Hinges on Farm Mortgages

Farmer Mac has the authority to guarantee three classes of assets: farm mortgages, rural single-family home mortgages, and certain USDA guaranteed loans. While Farmer Mac may purchase and hold all three classes of assets, the economics of issuing mortgage-backed securities makes the mixing of different asset classes in a single pool unattractive. This is because each asset class offers investors different risk characteristics, such as prepayment risk and default risk. Of the three kinds of assets, sustained activity in farm mortgages appears most critical to Farmer Mac's near-term financial viability and to fulfilling its legislative mandate (Hiemstra, et al.).

Farmer Mac has not guaranteed a rural home loan and this portion of its authority will likely remain dormant for some time. Farmer Mac has not purchased these loans under its open window purchasing program and developing a housing program will take time. The AgFirst Farm Credit Bank remains as a Farmer Mac pooler and is also a Fannie Mae certified purchaser and servicer. It intends to use Farmer Mac's guarantee to facilitate a nationwide rural home loan securitization program through Fannie Mae.

Even though the market size of Farmer Mac I eligible home loans (homes in towns of less than 2,500) is substantial, the presence of other GSE's and Federal housing programs will limit Farmer Mac rural home volume if it decides to pursue this market in the future. Rural housing markets are already supported by the FCS, Fannie Mae, the Federal Home Loan Bank System (FHLBs), the Federal Home Loan Mortgage Corporation (Freddie Mac), the Veterans Administration, the Federal Housing Administration, and USDA's Rural Housing Service. A 1991 U.S. General Accounting Office study points out that Farmer Mac's role in rural housing is uncertain given the existing level of Federal support.

While Fannie Mae and Freddie Mac do not have rural mandates, they now have greater incentive to purchase rural housing loans than in the past because of home purchasing goals required by the Housing and Community Development Act of 1992 (P.L. 102-550). The purchasing goals are for low- and moderate-income family housing located in central cities, rural areas, and other under served areas (Federal Register). Goals established define "rural" to include 60 percent of nonmetropolitan counties and 54 percent of nonmetropolitan residents. Fannie Mae issued specific rural home loan underwriting guidelines in 1994 to facilitate their purchases (Fannie

Mae). Also, since Farmer Mac's creation, liquidity to rural housing credit markets was enhanced when commercial banks were given access to the FHLBs in 1989 (Konstas).

Farmer Mac II, the secondary market for FSA guaranteed loans, continues to grow steadily, with $66 million in volume for the year ending June 30, 1996. The Farmer Mac II program could be a significant contributor to Farmer Mac revenues if it penetrates this potentially sizable market. Nonetheless, the size and margins in this market are insufficient alone to make Farmer Mac profitable. While Farmer Mac II offers a variety of competitive purchasing options to lenders, it faces competition from at least three other companies when buying these guaranteed loans.

While rural home mortgages and USDA guaranteed loan purchases might contribute to the long-run viability of the corporation, they are less important in the short run. Also, Farmer Mac's primary legislative purpose is "to increase the availability of long-term credit to farmers and ranchers at stable interest rates, and provide greater liquidity and lending capacity in extending credit to farmers and ranchers."[3] Therefore, our analysis focuses on Farmer Mac's commercial agricultural mortgage activities.

Estimating Farm Sector Debt Available to Farmer Mac I

Demand for farm mortgage credit comes from new purchases and capital improvements and the refinancing of existing indebtedness. Annual mortgage volume is dependent on factors such as the volume of farmland transactions, movements in interest rates, and the health of the farm economy. Broad estimates of the dollar volume of both origination (flow) and outstanding (stock) farm sector commercial debt immediately eligible and available to the Farmer Mac I market can be made from several data sources. These data do not allow for adjustments in farm debt supply and demand conditions that might arise from an active secondary market. However, such changes, to the extent they occur, are expected to evolve slowly over time.

Farm sector debt figures include debt owed by operators and nonoperators--primarily landlords. Farm operators rent over 40 percent of the acres they farm and any mortgage debt that their landlords' incur is included in the sector total. While nonoperator debt is eligible for the Farmer Mac I market and is included in our analysis of farm sector debt, statute requires Farmer Mac to develop standards that "ensure that the borrower is or will be actively engaged in agricultural production" and so the primary legislative intent of Farmer Mac is supporting farmers and ranchers. USDA's Farm Costs and Returns Survey provides information on debt usage reported by farm operators only.

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[3] Sec 701, Subtitle A, Title VII of the Agricultural Credit Act of 1987 (P.L. 100-233). The conference committee to H.R. 3030 adopted Senate language defining "agricultural real estate" to include rural houses. Authority to operate a secondary market for certain USDA-guaranteed loans came under the Food, Agriculture, Conservation, and Trade Act of 1990 P.L. (101-624).

Outstanding Farm Sector Debt

The farm debt market is small compared to the $3.7 trillion home mortgage market served by the housing GSE's. The total amount of farm debt (including operator household debt) outstanding at the beginning of 1996 was $160 billion (table 1).[4] Of this total, just over half, or $85 billion, is currently secured by farm real estate. Only debt secured by a first mortgage is eligible for sale through the Farmer Mac I market. A portion of this outstanding mortgage debt may have sufficient documentation--or performance history in lieu of documentation--to permit it to be sold directly to Farmer Mac without being refinanced, thus avoiding substantial transaction costs associated with refinancing. The remaining $75 billion is classified as nonreal estate farm debt, some of which could be reconfigured as real estate debt and made eligible for sale through Farmer Mac.

When the $85 billion in outstanding farm sector real estate debt is broken down by lender category, as much as $27 billion may not be available to commercial mortgage originators for refinancing or repackaging. This $27 billion includes $19 billion in loans held by "individuals and others," $5 billion in Farm Service Agency (FSA) direct loans, and another $2.5 billion guaranteed by FSA. This means that Farmer Mac I is competing in a commercial farm mortgage market that was only about $58 billion at the start of 1996. When qualifying standards and other factors are taken into consideration, the portion of the $58 billion that is eligible or available to Farmer Mac I is likely to be significantly less.

Individuals (sellers) account for most of the $19 billion classified as being held by "individuals and others." Some of this debt could be refinanced by a qualified originator and sold to Farmer Mac, but the amount may be relatively small. Such debt often results from the desire of related parties to facilitate the inter-generational transfer of farm property. Rogers and Wunderlich report that 22 percent of all land acquired by farmers in 1988 was purchased from relatives. Advantageous tax treatments and the desire to provide below-market financing with flexible repayment plans are major motivations for individuals to provide this financing. Seller provided financing to non-related parties may also be motivated by tax law and the desire to facilitate a sale with below-market rates.

Individual financing is a relatively stable component of farm real estate financing, and its market share may not be greatly influenced by the presence or absence of Farmer Mac. The financing of farm real estate transactions by individuals hit a peak market share of 41 percent in 1981, the same year as the peak in farmland values and interest rates (USDA 1992). The share declined in the 1980's, but stabilized in the 23 to 30 percent range. Even at the low in seller provided financing, sellers ranked closely behind commercial banks and Federal Land Banks in

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[4] More commonly reported farm debt figures include only that debt associated with the farm business.

providing financing for agricultural land transfers (Koenig). FCRS data for the 1990's indicates seller financing continues as a major source of farm real estate credit.

The $19 billion “individual and other category” also includes State-administered-farm-loan program debt which does not qualify for Farmer Mac I. The total outstanding balance on all known State loan programs was $1.8 billion in 1993-94 (Wallace, Erickson, and Mikesell). Farmer Mac has had some success helping State programs under its Farmer Mac II authority. State programs, which use tax-exempt bond funding, also got a boost in authority under the Small Business Job Protection Act of 1996 (P.L. 104-188). This legislation allows the financing of inter-generational farmland transfers and raises acreage eligibility limits.

Converting Non-Real Estate Sector Debt

Some of the $75 billion in existing nonreal estate farm debt, particularly debt used to finance machinery and equipment, could be restructured and securitized (Farmer Mac 1995). However, the amount that may be converted is likely to be relatively small for a number of reasons. First, the cost of perfecting an agricultural mortgage, particularly one that meets Farmer Mac standards, is substantially higher than the cost of perfecting a loan secured with chattel. These added costs will deter conversion. Second, nonreal estate debt will be difficult to standardize sufficiently for issuance as mortgage-backed securities. Analysis of FCRS data shows that nearly half of farm operators’ nonreal estate debt is owed for a year or less. Nonreal estate debt with longer maturities is also frequently structured as line-of-credit loans or as demand notes that have irregular repayment or disbursement schedules.

Third, borrower-lender relationships are an important consideration in a farmer’s choice of lender. Many farm borrowers are not accustomed to having their loans sold to a third party and losing some flexibility in their lender relationship. Fourth, besides loss of contract flexibility, borrowers have been reluctant to convert debt with shorter amortizations at lower interest rates to longer amortizations with higher rates. Farmer Mac plans to offer products with short term rates, but its competitive advantage in this segment of the debt market has not yet been demonstrated. Captive finance companies and merchants have a large and growing presence in nonreal estate farm credit markets, are very price competitive on shorter term credits, and view credit as a method to facilitate product sales (Monke). Finally, 1994 FCRS data reveal that much nonreal estate indebtedness tends to be small and hence less suitable for securitization. About 13 percent of nonreal estate farm operator debt is owed by operators with less than $50,000 in total indebtedness (table 2). The average nonreal estate indebtedness for these farms was under $8,000. Even for farms owing $50,000 to $100,000, the average nonreal estate indebtedness was only $30,000.

Given all these factors, the amount of nonreal estate that could be structured for mortgage-backed securities is fairly low. Regardless of the amount, conversion is likely to be gradual as Farmer Mac becomes more established.

Farm Mortgage Origination Volume

Farmer Mac can grow by capturing market share from origination volume resulting from new purchases and refinancings. Complete data on farm sector mortgage origination volume is not available, but estimates can be calculated from outstanding debt data and by making assumptions about farm mortgage principal repayment rates (Koenig). Life insurance companies and the FSA report on their origination volume, but commercial banks do not. Updating Koenig's 1992 research, we used the following equation to make estimates of gross annual farm loan origination volume:

$$N_t = L_t + (R_t * L_{t-1}) - L_{t-1} ,$$

where N_t is volume of new loans (originations) made during year t; R_t is principal repayment rate in year t; L_{t-1} is the amount of farm real estate debt outstanding at the end of the previous year t; and L_t is the amount of farm real estate debt outstanding at the end of year t.

This accounting identity is used to estimate the total private sector farmland market origination volume (including operator household debt, but excluding USDA held or guaranteed debt) using two principal repayment rate assumptions. For a lower bound estimate, we used the unweighted average annual principal repayment rate of 11.9 percent experienced by life insurance companies and Federal Land Banks from 1960 to 1988. To get an upper bound estimate, we used the 16.5 percent principal repayment rate (excluding loan sale repayments) experienced by life insurance companies from 1988 to 1994. Life insurance company mortgages often have 3 to 5 year balloon payments and so their volume tends to reprice more quickly.

The assumptions provide an estimate of private sector origination volume of between \$10 and \$14 billion in both 1994 and 1995 (table 3). By also excluding debt owed to "individual and others" from the analysis, the annual volume drops to \$8 to \$10 billion. Given the nature of "individual and other" debt, this lower estimate best reflects the market in which commercial mortgage lenders compete, and hence best reflects the market size currently facing Farmer Mac. Adjustments must still be made for failure to meet underwriting standards, small loan size, and other factors to estimate volume available to Farmer Mac I.

Total commercial bank farm mortgage origination volume was estimated to be \$4 to \$5 billion in 1995, and the FCS originated about \$3 billion. The life insurance companies reported acquiring between \$1.4 and \$2.1 billion in farm mortgages annually from 1990 to 1995 (Stam). Neither the life insurance companies nor the FCS appear eager to sell existing or new mortgages at this time, suggesting that, at least in the short-run, commercial banks and other nontraditional lenders will be the major source of volume.

Characteristics of Farm Debt Limit Volume

Farm debt is not homogenous. Some farm debt will be unsuitable or uneconomical to sell into the secondary market because of its size, interest rate type, and how it is structured. In addition, the characteristics of the primary market lenders and their incentives to sell loans will influence Farmer Mac volume growth.

Loan Size

Much of farm real estate debt is owed in small amounts. About $10 billion in farm operator real estate debt reported on the 1994 FCRS, 16 percent of the total, was owed by farm operators with less than $50,000 of total indebtedness (table 2).[5] The average farm real estate indebtedness for these operators was just $16,800. Another $9 billion--or 14 percent of the total--was owed by operators with $50,000 to $100,000 in total indebtedness. The average farm real estate indebtedness for these operators was only $51,500. Data provided by FCA supports the FCRS data (FCAb). Half of all FCS farm real estate loans outstanding on June 30, 1996 had a principal balance under $50,000, averaging just $23,300. These loans accounted for 12 percent of the FCS's $28 billion in farm real estate loans. The average size of all FCS farm real estate loans outstanding was $94,500.

Smaller loans--those less than $50,000 in size--are less profitable to securitize than larger loans because most transaction costs are fixed. Some lenders, especially life insurance companies, do not solicit farm mortgage business under $100,000 to hold down assembling and servicing costs per dollar lent. All Farmer Mac loan pools have contained larger loans. The last pool averaged $456,000, with 56 percent of those loans exceeding $200,000 in size.

Lenders have less incentive to sell small loans. Small loans are less attractive to sell because the interest rate risk to the lender is less, transactions costs are higher per dollar sold, and the impact of selling a loan on the lender's capital and liquidity is small. Conversely, many commercial lenders, especially small to medium sized commercial banks, prefer to sell large real estate loans to reduce interest rate risk and improve liquidity. Another factor is the relatively high documentation requirements of the Farmer Mac market and the cost it imposes on small originations. Banks in particular are accustomed to keeping documentation and analysis to a minimum on small loans. For example, mortgages under $250,000 are exempt from regulatory appraisal requirements imposed on the FCS and commercial bank loans. Farmer Mac's qualifying standards require such appraisals. Farmer Mac has the flexibility to adjust its loan document requirements for smaller loans, particularly when sufficient compensating credit strengths are demonstrated.

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[5] Farmer Mac's statute requires that underwriting standards do not discriminate against small originators or small mortgage loans that are at least $50,000.

For Farmer Mac I to grow rapidly it will need to capture a significant share of the large farm real estate credit market (loans over $100,000). Dodson and Koenig discuss niche lending in agriculture and point out that large farms are the primary target for most lenders because of their large and growing credit needs. Large farms account for just 5 percent of all farms, but 40 percent of production and 25 percent of total farm debt. Their average total indebtedness is over $300,000. Competition for these customers is keen; life insurance companies target this niche, as do many FCS lenders and banks.

Interest Rates

Variable rate financing (interest rate changes periodically during the life of the loan contract) is widely used in farm loan contracts and will limit demand for Farmer Mac's intermediate- and long-term fixed-rate loan products. The widespread use of variable rate financing is evident in both FCS and commercial bank loan data. Roughly 80 percent of FCS outstanding farm mortgage loans have rates that adjust during the life of the loan contract. For commercial bank farm loans, over half of nonreal estate originations for machinery and equipment purposes (intermediate term loans) are made at variable or floating rates, and nearly two-thirds of all bank farm loans carry variable or floating rates (Walraven). A 1995 University of Illinois survey of agricultural banks in Iowa, Illinois, and Indiana also found that two-thirds of bank farm , loans were made with variable rates (Moss, Barry, and Ellinger).

Recognizing the strong demand for short term variable rate financing, Farmer Mac intends to offer a 1-year adjustable rate mortgage product with amortizations up to 25 years. This type of variable rate product is in addition to its loans with intermediate-term (5 years) and long-term (15 years) fixed rates. But a 1-year adjustable rate product may be less competitive in credit markets relative to its loans offering fixed rates for longer periods. Farmer Mac's efforts to encourage farmers accustomed to variable rate financing to pay a premium for a longer term interest rate commitment will likely remain difficult if the interest rate yield curve is relatively steep. In the past, Farmer Mac has been able to lower rates on its long term loans by offering products with prepayment clauses, a feature not familiar to many farm borrowers.

Loan Structure or Purpose

Aggregate farm real estate debt totals exaggerate the market available to Farmer Mac I because the totals include debt which is difficult to structure for securitization. While Farmer Mac does not impose requirements or limits on the use of funds sold into its market, some farm mortgage debt is structured as line-of-credit loans or as other short-term loans to finance machinery, annual operating costs, or livestock purchases. Credits for these purposes often have short maturities and irregular disbursements and repayment plans. These features make these credits, whether new or restructured existing debt, less suitable for securitization through mortgage-backed securities because the loans are not easily standardized. Also, debt is classified as farm real estate debt, regardless of whether the loan is secured with a first or second mortgage trust.

In response to farm financial distress of the 1980s, some lenders have collateralized loans for nonreal estate purposes with real estate to better securitize the loan. How much of this occurred and is still occurring is uncertain. The 1995 Illinois survey of banks in three Midwest states found 12 percent of bank farm loans secured by real estate were primarily for purposes other than for farmland purchase or the refinancing of existing farm real estate debt.

Lender Factors

Unless competitive pressures or other needs encourage the FCS and life insurance companies to return as active Farmer Mac I participants, the amount of farm mortgage volume entering the market over the next few years may largely be determined by commercial banks. Farmer Mac indicates "a number of factors have constrained participation in Farmer Mac's programs to date and caused its core business activities to be unprofitable"(SEC).

Some of those factors have included: "the excess liquidity of many agricultural lenders; the attractiveness of loans (otherwise qualified under the Farmer Mac programs) as investments for their originators; the disinclination of many lenders to offer intermediate-term adjustable rate and long-term fixed rate agricultural real estate loans, as a result of the higher profitability associated with short-term lending; the lack of borrower demand for intermediate-term and long-term loans due to the lower interest rates generally associated with shorter term loans" (SEC). Many of these factors might take years to change or they relate to underlying forces in U.S. and global financial markets that are beyond Farmer Mac's sphere of influence.

A positive influence on Farmer Mac growth has been the decrease in commercial bank liquidity and the growth in bank farm mortgage lending. The average loan-to-deposit ratio, a traditional indicator of lending capacity for agricultural banks (commercial banks with a greater than average volume of farm loans-to-total loans) was stable around 0.55 until 1993 (Walraven). The loan-to-deposit ratio for these banks has since risen to about 0.65, near a 35 year high. Yet, despite this apparent tightening of lending capacity, Federal Reserve Bank surveys show that liquidity is not a major concern for many bankers. Banks now have access to the FHLBs and so the loan-to-deposit ratio may not be as relevant a measure of bank lending capacity as in the past. Also, the 1995 University of Illinois study of Midwest bankers does not bode well for bank participation in Farmer Mac I. In that survey (taken before Farmer Mac's charter change), bankers were asked to rank 25 services or products according to their importance for maintaining competitive agricultural lending position in the future. The use of Farmer Mac for selling real estate loans ranked last. A new survey is needed to see if these attitudes have changed.

The sheer number of commercial banks and dispersion of farm loan assets within the banking system may hinder market penetration by Farmer Mac I. As of June 30, 1995 there were 3,488 banks classified as agricultural, out of a 10,117 total bank population (USDA 1996b). Agricultural banks account for 56 percent of the total volume of bank-held farm debt. These banks had large concentrations of farm loans in their total loan portfolios, with an average agricultural-loans-to-total loans-ratio of 37 percent. These numbers indicate that Farmer Mac will be marketing its programs to a large and diverse group of commercial banks

Nonagricultural banks account for the remaining 44 percent of all bank-held farm debt, with a sub-group of 643 banks accounting for 26 percent of all bank held farm debt. Nonagricultural banks have agricultural-loans-to-total loans ratios averaging just 1 percent. Therefore, the incentives for nonagricultural banks to sell loans, such as bank liquidity and agricultural lending competition, may be much different from those of agricultural banks. Banks with the largest presence in farm lending could have the greatest short run impact on volume growth.

The supply of mortgages to Farmer Mac I from banks may also be somewhat constrained by the requirement that loans sold must come from financial institutions owning voting stock in the corporation. A 1990 study found that only 15 percent of banks had purchased the necessary stock, accounting for just 29 percent of bank-held farmland debt (Koenig and Rossi). These percentages may not have changed much because the number of voting stock holders has been very stable. Banks with small farm loan activity might find the stock purchase requirement as another disincentive toward participation, even though the cost it imposes is modest.

Bank volume will be further constrained by banks' dominance in FSA guaranteed lending. Banks account for nearly 80 percent of FSA guaranteed farm ownership loan program volume. Bank use of guarantees is so dominant, that nearly 10 percent of all bank farmland secured debt is guaranteed by FSA. While this debt is ineligible for Farmer Mac I, it may qualify for Farmer Mac II. An unknown amount of bank held farm debt is also guaranteed by the Small Business Administration and would also be ineligible for Farmer Mac I or Farmer Mac II.

Underwriting Standards Limit Qualifying Loan Volume

Farmer Mac has developed a precise set of credit underwriting and loan repayment standards for mortgages that qualify for sale (Farmer Mac 1991). Standards adopted by Farmer Mac ensure that the farming operation has sufficient equity and cashflow margins, good balance sheet liquidity, and adequate collateral coverage. Farmer Mac will waive some standards on new originations if other factors are strong and on seasoned mortgages that have strong repayment histories. For those loans over 5 years of age, most standards can be waived provided that the loans have a satisfactory repayment history, a loan-to-appraised value less than 60 percent, and suitable documentation.

Farmer Mac guidelines specify seven standards for loan eligibility. For each potential loan, these standards specify acceptable measures related to creditworthiness of the borrower, historical income statements and balance sheets, debt-to-asset ratio, debt service and liquidity ratios, loan-to-appraised value and cash flow debt service coverage ratios, minimum acreage and annual receipts, and loan conditions and amortization terms. The FCRS provides a basis for estimating how much farm operator debt might be eligible under Farmer Mac's qualifying standards. For each reporting farm operation, FCRS data allow preparation of income statements and balance sheets, and construction of the liquidity, debt service, solvency, and profitability ratios that determine eligibility for Farmer Mac. The guidelines specify a Qualifying Worksheet format to allow concise presentation of evidence that a loan has met all underwriting criteria. FCRS data allow close approximation of the Farmer Mac Qualifying Worksheet.

Farmer Mac requires the underwriting ratios be calculated on a pro forma basis at loan origination, both for new and existing loans under five years of age. The FCRS data provide financial information for all existing operator farm debt at a single point in time. The pro forma underwriting ratios would likely change when the new loan information is factored in for farms acquiring additional land or making capital purchases, or if refinancing is occurring. Often farms refinance because of lower interest rates, better loan terms, or to improve their capital structure, all of which could influence the pro forma ratios.

A prior study by Ryan and Koenig found that when all loan underwriting standards were applied to 1989 FCRS data, only 18 percent of total farm operator debt (20 percent of real estate debt) qualified for sale in the Farmer Mac I market. For purposes of this analysis, all farm debt was assumed to be potentially eligible, despite the previously mentioned concerns that much of the nonreal estate debt would not likely be securitized.

Following the same methodology used in our previous study we found that overall qualifying percentages had not changed much by either 1993 or 1994. Less than 20 percent of all farm operator debt reported on the 1994 FCRS met all qualifying standards (table 4). However, not all standards must be strictly enforced and the restructuring of existing debt for sale to Farmer Mac could raise qualifying percentages from this level. Three of the most important qualifying standards are the debt-to-asset, liquidity, and debt coverage ratios. When only these qualifying criteria are applied, about 26 percent of all 1994 reported farm operator debt qualify for sale to Farmer Mac. Of the total $96 billion in outstanding farm debt reported in the 1994 FCRS, about $26.6 billion would have met these three standards, while about $18.6 billion would have met all Farmer Mac qualifying standards.

Application of individual underwriting standards to 1994 FCRS data indicate that farm asset values (as estimated by the operator) are not a limiting factor in credit extension decisions. Over 72 percent of all farm debt qualified for Farmer Mac I under the debt-to-asset ratio standard (maximum of 50 percent). The most restrictive criteria relate to liquidity and loan repayment capacity. Less than 49 percent of debt qualified under the current ratio standard (minimum 1:1), while less than 48 percent of operator debt met the total debt service coverage ratio standard (minimum of 1.25:1). Only 29 percent of all debt qualified under the combined restriction of these two criteria.

Farms with Low Debt Levels More Likely to Qualify

While loans of less than $50,000 may be less attractive for securitization, FCRS data for 1994 indicate that operators with smaller debt balances are more likely to qualify for Farmer Mac I than farms with larger debt balances. Attracting larger credits would provide Farmer Mac I more rapid volume growth and profitability. Our research found that the debt-to-asset ratio standard was met by 85 percent of the debt on farms with total indebtedness of less than $50,000, but only 61 percent on farms with total indebtedness greater than $500,000. Also, low-debt farms reported a larger share of debt eligible under both the debt coverage and current ratio standards than did high-debt farms.

Meeting multiple standards also proved more difficult for operations with higher debt levels. Only 22 percent of debt owed by farms owing more than $500,000 met the debt coverage and current ratio standards simultaneously, while this combination was met by 38 percent of the debt owed by farms owing less than $50,000. Only 13 percent of debt on high-debt farms, and 18 percent of debt on low-debt farms, met all standards simultaneously. Farms with total debt between $100,000 and $250,000 were best able to meet all Farmer Mac standards, with 25 percent meeting all qualification standards.

High Debt Farms Benefit From Relaxation of Standards

To test the sensitivity of existing debt to Farmer Mac qualifying standards, the share of total debt meeting the debt-to-asset ratio, debt coverage ratio, and current ratio standard were calculated at relaxed thresholds. The share of debt meeting the debt-to-asset ratio standard rose to 82 percent as the criterion was relaxed from .50 to .60, while lowering the current ratio standard from 1.0 to .50 raised the share of debt meeting this criteria from 49 percent to 70 percent.

Farms with the highest reported debt levels showed the largest increases in Farmer Mac eligibility as qualifying standards were relaxed. Farms indebted more than $500,000 showed a 16 percentage point increase in the share of debt qualifying as the debt-to-asset ratio standard was relaxed from .50 to .60. These farms also showed a gain in eligible debt of 17 percentage points as the minimum debt-coverage ratio declined from 1.25 to 1.00, and a gain of 28 percentage points as the current ratio standard decreased form 1.0 to .50.

About one-fourth of all debt simultaneously met the combined Farmer Mac standards for debt-to-asset ratio, debt-coverage ratio, and current ratio. As these standards were jointly relaxed to the levels described above, one-third of all debt met these relaxed standards simultaneously. The share of debt qualifying for operations owing more than $500,000 nearly doubled.

If Farmer Mac relaxes its standards or waives standards on a consistent basis, this research suggests that the amount of market volume eligible and suitable for the Farmer Mac I program will expand. The statute language regarding underwriting standards is broad enough to allow Farmer Mac maximum flexibility to meet changing lending environments. The two most specific requirements are those that limit the loan-to-appraised collateral value to 80 percent (current standard is 75 percent) and the requirement that each borrower demonstrate sufficient cash-flow (debt coverage ratio now used) to adequately service the mortgage. While easing or waiving standards provides a larger pool of qualifying existing debt, it also raises the risk of loan default. If defaults became were to become excessive, Farmer Mac has a conditional line of credit with the U.S. Treasury.

Conclusions

The $160 billion U.S. farm debt market is small compared to the $3.7 trillion U.S. housing mortgage market. Our analysis of the farm credit market suggests that when all Farmer Mac I underwriting standards are strictly applied and the characteristics of farm debt and primary market lenders are considered, a relatively small portion of this $160 billion would be immediately available and eligible for Farmer Mac I. The benefits of an active secondary market could increase eligible volume over time by offering attractive rates and a risk management tool for lenders and borrowers alike. While Farmer Mac may ultimately be successful under its new charter, it still faces a relatively thin farm mortgage market, one served by another GSE that has the ability to market products similar to those of Farmer Mac.

The study points out that a little over half, or $85 billion, of outstanding farm debt at the end of 1995 was secured by real estate. Farmer Mac can only securitize debt backed by a first mortgage. Some of the remaining $75 billion might be structured such that it qualifies for the secondary market, but doing so will take time and the amount converted may be small. The study also notes that commercial lenders that qualify as originators for Farmer Mac compete in a farm real estate market that was only $58 billion at the start of 1996. Private market commercial farm mortgage origination volume for the last two years likely fell in a range of $8 to $10 billion.

The FCA estimated that Farmer Mac needed between $1 and $2 billion in on-going volume to produce enough income to cover its 1995 annual operating expenses (FCA). While the exact volume necessary for a profitable corporation is an issue for further research, the numbers suggest that Farmer Mac may need to pool around $1 billion annually for at least a few years to build outstanding volume to a profitable level. Farmer Mac collects annual guarantee fees on the outstanding principal of its loan pools and can also earn income from various aspects of the securitization process. This research indicates that this amount of volume is available and eligible to Farmer Mac, but reaching this level of activity may require significant market penetration, which might take some time.

An examination of the characteristics of farm debt suggests that significant segments are either now unavailable to or ineligible for the market. First, widespread use of variable rate financing in farm mortgage markets will limit Farmer Mac volume as long as the interest rate environment remains stable. Second, as much as 15 percent of farm debt is held in small loans (under $50,000) which are not likely candidates for securitization. Third, large portions of current farm nonreal estate debt, and smaller portions of current farm real estate debt, will not easily be restructured to fit the standards needed for mortgage-backed securities.

When the three most important Farmer Mac underwriting standards were simultaneously applied to financial data on farm operators, only about 26 percent of all 1994 farm operator debt would qualify for the market. The debt-to-asset ratio standard was found to be least restrictive with over 72 percent of all farm debt meeting this test, while ratios for liquidity and loan repayment capacity disqualified nearly half of farm operator debt. Farms with little indebtedness were more likely to qualify than farms with large indebtedness. Farmer Mac has procedures for waiving qualifying standards that are not in compliance and waiving standards for certain seasoned mortgages. In addition, the restructuring of farm debt could raise the portion of debt meeting these qualifying standards. Therefore, these estimates may best be viewed as the minimum amount of farm debt qualifying for the market.

Sensitivity analysis shows that, when underwriting standards were modified, a larger portion of total farm debt qualified for Farmer Mac I. Up to one-third of all farm debt could meet less restrictive levels of the three most important standards simultaneously. Also, because much of farm real estate debt is in small loans, the potential pool of eligible Farmer Mac debt could be enlarged by reducing documentation burdens or applying different underwriting standards for small credits. However, such practices could increase default risks.

In the absence of significant competitive pressure, the FCS and life insurance companies may not be active sellers to Farmer Mac in the immediate future. If this is true, commercial banks and nontraditional lenders will supply the bulk of volume growth in the near term. But banks have thus far been disinclined to participate for a host of reasons including adequate liquidity, the attractiveness of loans as investments, and high profit margins enjoyed on short term lending. The existing $24 billion in farmland secured debt held by banks represents a large potential pool of loans for Farmer Mac to package. While about one fourth of total bank farm lending is concentrated in the hands of just 600 banks, much of the remaining volume is scattered among the 9,600 U.S. banks, making it time consuming to consolidate into loan pools.

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Table 1. Outstanding farm sector debt, reported by lender, 12/31/95.[a]

Debt classification	Volume	Share of total
	Mil. dollars	Percent
Real estate		
Farm Credit System	26,494	31.3
Farm Service Agency	5,403	6.4
Life insurance companies	9,622	11.4
Commercial banks	23,900	28.2
Individuals & others	19,200	22.7
Total	84,620	100.0
Nonreal estate[b]		
Commercial banks	39,800	53.0
Farm Credit System	13,043	17.4
Farm Service Agency	5,786	7.7
Individuals & others	16,500	22.0
Total	75,129	100.0
Total debt		
Farm Credit System	39,538	24.7
Farm Service Agency	11,189	7.0
Commercial banks	63,700	39.9
Life insurance companies	9,622	6.0
Individuals & others	35,700	22.3
Total	159,749	100.0

Source: Unpublished U.S. Dept. Agr. data.

[a] Includes operator household debt.

[b] Not secured by farm real estate.

Table 2. Farm financial data for farm operators, by reported debt level, December 31, 1994

	Level of indebtedness of the farm operator: $250,000 or more	$100,000-$249,999	$50,000-$99,999	Less than $50,000	No debt	All farms
Number of farms	80,116	159,424	175,502	611,911	1,008,547	2,035,500
Percent of farms	4	8	9	30	50	100
			Million dollars			
Debt reported:						
Short term debt[a]	8,820	3,749	1,704	1,984	0	16,257
Nonreal estate debt[b]	9,035	5,542	3,474	2,750	0	20,800
Real estate debt	28,117	18,261	9,048	10,298	0	65,725
Total debt	45,972	27,552	14,226	15,032	0	102,782
			Percent			
Distribution of debt:						
Short term debt[a]	54	23	10	12	NA	100
Nonreal estate debt[b]	43	27	17	13	NA	100
Real estate debt	43	28	14	16	NA	100
Total debt	45	27	14	15	NA	100
			Dollars per farm			
Debt reported:						
Short term debt[a]	110,096	23,514	9,708	3,242	0	7,987
Nonreal estate debt[b]	112,769	34,765	19,793	4,494	0	10,219
Real estate debt	350,954	114,544	51,556	16,830	0	32,289
Total debt	573,819	172,823	81,057	24,565	0	50,494
Owned assets	2,025,105	715,826	425,134	256,394	320,804	408,456

Source: Farm Costs and Returns Survey, 1994.

NA = Not applicable.

[a] Debt with less than one year of maturity.

[b] Not secured with farm real estate.

Table 3. Estimated annual farm real estate debt origination volumes assuming different repayment rates,[a] 1989-95

	Total real estate debt	Total excluding USDA debt		Total excluding USDA and "Individual & others" debt	
Year	Historical repay rate	Historical repay rate	Life Ins. repay rate	Historical repay rate	Life Ins. repay rate
			Dollars (billions)		
1995	11.3	10.4	13.8	7.7	10.2
1994	11.4	10.6	13.9	7.9	10.4
1993	10.3	9.6	12.9	7.0	9.5
1992	10.6	9.9	13.1	6.8	9.2
1991	9.8	9.1	12.3	6.6	9.0
1990	8.0	7.0	10.2	6.0	8.4
1989	7.4	6.9	10.2	5.8	8.3

[a] Historical average principal repayment rate for life insurance companies and the FCS from 1960-1988 was 11.9 percent. The average life insurance company principal repayment rate was 16.5 percent for the 1988-94 period.

Table 4. Share of total farm operator debt meeting Farmer Mac standards and alternative standards, by debt reported, December 31, 1994.

		Level of indebtedness of the farm operation:			
All farms		$250,000 or more	$100,000- $249,999	$50,000 $99,999	-Less than $50,000
		Percent			
Share of total farm debt meeting:					
All Farmer Mac standards	13	25	21	18	18
Individual standards					
Debt-to-asset ratio:					
< .50	61	78	83	85	72
< .55	71	83	84	87	78
< .60	77	87	84	88	82
Debt coverage ratio:					
> 1.25	39	51	60	56	48
> 1.15	42	54	62	56	50
> 1.10	44	56	63	56	51
> 1.00	46	59	64	57	53
Current ratio:					
> 1.0	43	53	52	58	49
> 0.75	54	61	58	60	57
> 0.50	71	72	65	65	70
Share of total farm debt meeting combined standards using:					
Farmer Mac guidelines[a]	17	30	33	37	26
Less restrictive guidelines[b]	25	34	37	40	31
Least restrictive guidelines[c]	32	43	43	45	33

Source: Farm Costs and Returns Survey, 1994.

[a] Current ratio > 1, Debt coverage ratio > 1.25, Debt-to-asset ratios < .50.

[b] Current ratio > .75, Debt coverage ratio > 1.15, Debt-to-asset ratios < .55.

[c] Current ratio > .50, Debt coverage ratio > 1.00, Debt-to-asset ratios < .60.